(12) PATENT APPLICATION PUBLICATION
(19) INDIA
(22) Date of filing of Application :04/10/2025
(21) Application No.202511095552 A
(43) Publication Date : 05/12/2025

(54) Title of the invention : A DEVICE FOR ENERGY-EFFICIENT SIGNAL AMPLIFICATION IN CELLULAR NETWORKS

(51) International classification	:G06F0001324000, H04W0052140000, G06F0001260000, G06F0001320300, H04W0052020000
(31) Priority Document No	:NA
(32) Priority Date	:NA
(33) Name of priority country	:NA
(86) International Application No Filing Date	: :01/01/1900
(87) International Publication No	: NA
(61) Patent of Addition to Application Number Filing Date	:NA :NA
(62) Divisional to Application Number Filing Date	:NA :NA

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(57) Abstract :
The invention relates to a device (100) for energy-efficient signal amplification in cellular networks. The device comprises an input module (101), adaptive gain control unit (102), intelligent power management unit (103), amplification stage (104), thermal regulation system (105), and output module (106). By integrating adaptive gain and real-time power scaling, the invention achieves significant reductions in energy consumption while maintaining superior signal amplification quality. The compact modular design ensures compatibility with existing infrastructure, making the device a sustainable and practical solution for modern and future cellular networks.

No. of Pages : 15 No. of Claims : 6